What is claimed is:

1.   A router for transmitting a packet between a mobile node in a foreign link area and correspondent nodes, the router comprising:

a data storage unit, which stores data for generating an authentication key generation token;

a first interface, which receives and transmits a packet to a destination address stored in a header of the packet;

a packet monitoring unit, which outputs an authentication request packet requiring authentication of the mobile node if the packet transmitted from the first interface is the authentication request packet; and

a controller, which receives a packet from the packet monitoring unit, generates an authentication key generation token with reference to the data for generating an authentication key generation token stored in the data storage unit, generates an authentication key using the authentication key generation token, stores the authentication key generation token and the authentication key in the data storage unit, and outputs the authentication key generation token to the first interface;

wherein the first interface receives and transmits the authentication key generation token to the mobile node.

2.   The router of claim 1, wherein if the packet received from the first interface is a binding update packet encoded using the authentication key generated by the mobile node according to the authentication key generation

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token, the packet monitoring unit outputs the binding update packet to the controller, and

the controller extracts binding information, including a home address of the mobile node and a foreign address of the mobile node provided in a foreign link area, from the binding update packet using the authentication key stored in the data storage unit, and stores the extracted binding information in the data storage unit.

3. The router of claim 2, further comprising:

a packet converter, which receives a packet output from the packet monitoring unit, and converts a source address of the packet from the foreign address of the mobile node to the home address of the mobile node and outputs the converted address, according to a control given by the controller; and

a second interface, which receives the packet output from the packet converter, and transmits the packet to a correspondent node, according to an address of the correspondent node stored in the header of the packet,

wherein the packet monitoring unit searches for the header of the packet received from the first interface, extracts and outputs binding information included in the packet header to the controller, and outputs the packet to the packet converter, and

the controller controls the packet converter, so that the packet converter converts the source address of the packet into the home address of

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the mobile node and outputs the converted address, if the binding information exists in the data storage unit.

4. The router of claim 3, wherein the controller controls the packet converter, so that the packet converter passes the packet without converting the source address included in the packet, if the binding information does not exist in the data storage unit.

5. The router of claim 3, wherein the second interface receives and outputs a packet transmitted by the correspondent node to the packet monitoring unit,

the packet monitoring unit outputs the destination address stored in the header of the packet received through the second interface, to the controller, and outputs a packet received from the packet converter,

the controller controls the packet converter, so that the packet converter converts the destination address of the packet into a foreign address of the mobile node, if the destination address is the home address of the mobile node and the home address is bound with the foreign address of the mobile node, and

the packet converter converts the destination address stored in the header of the packet transmitted by the correspondent node into the foreign address of the mobile node, according to a control given by the controller, and outputs the converted packet to the first interface.

6.   A routing method of transmitting a packet between a mobile node in a foreign link area and correspondent nodes, the method comprising:

(a) monitoring whether a packet transmitted from the mobile node is an authentication request packet requiring authentication of the mobile node;

(b) generating an authentication key generation token, with reference to pre-stored data for generating the authentication key generation token, if the packet transmitted from the mobile node is the authentication request packet requiring authentication of the mobile node;

(c) generating an authentication key using the authentication key generation token and storing the authentication key and the authentication key generation token; and

(d) transmitting the authentication key generation token to the mobile node.

7.   The routing method of claim 6, further comprising:

(e) receiving a binding update packet authenticated using the authentication key, the authentication key generated by the mobile node according to the authentication key generation token; and

(f) extracting and storing binding information comprising a home address of the mobile node and a foreign address of the mobile node provided in the foreign link area, from the binding update packet, using the authentication key.

8.   The routing method of claim 7, further comprising:

(g) receiving a packet transmitted by the mobile node, the packet including the binding information and data;

(h) checking whether the same binding information as the binding information included in the packet transmitted by the mobile node exists in the stored binding information;

(i) converting the source address of the packet from the foreign address of the mobile node into the home address of the mobile node, if the same binding information as the binding information included in the packet transmitted by the mobile node exists in the stored binding information; and

(j) transmitting the converted packet to the correspondent node.

9.   The routing method of claim 8, further comprising:

(k) transmitting the packet itself to the correspondent node without converting the source address thereof, if the same binding information as the binding information included in the packet transmitted by the mobile node does not exist in the stored binding information.

10.   The routing method of claim 8, further comprising:

(l) extracting a home address of the mobile node stored as a destination address in the header of the packet transmitted from the correspondent node;

(m) searching for the stored binding information and extracting a foreign address of the mobile node bound with the home address of the mobile node;

(n) converting the destination address of the header of the packet transmitted by the correspondent node into the foreign address of the mobile node; and

(o) transmitting the packet transmitted by the correspondent node to the mobile node, according to the foreign address of the correspondent node.

11.   A computer readable medium having embodied thereon a computer program for a routing method of transmitting a packet between a mobile node in a foreign link area and correspondent nodes, the method comprising:

(a) monitoring whether a packet transmitted from the mobile node is an authentication request packet requiring authentication of the mobile node;

(b) generating an authentication key generation token, with reference to pre-stored data for generating the authentication key generation token, if the packet transmitted from the mobile node is the authentication request packet requiring the authentication of the mobile node;

(c) generating an authentication key according to the authentication key generation token and storing the authentication key and the authentication key generation token; and

(d) transmitting the authentication key generation token to the mobile node.